

| | | | |
|-------------------------------|------------------------|---------------------|--|
| Notice of Allowability | Application No. | Applicant(s) | |
| | 10/622,242 | FRAZIER ET AL. | |
| | Examiner | Art Unit | |
| | James Kish | 3737 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 4/10/07.
2. ☒ The allowed claim(s) is/are 1-3,6-16 and 18.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. <input type="checkbox"/> Notice of References Cited (PTO-892) 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____ 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | <ol style="list-style-type: none"> 5. <input type="checkbox"/> Notice of Informal Patent Application 6. <input type="checkbox"/> Interview Summary (PTO-413), Paper No./Mail Date _____ 7. <input type="checkbox"/> Examiner's Amendment/Comment 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance 9. <input type="checkbox"/> Other _____ |
|---|--|

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with James Stevenson (*Reg. No.* 38,755) on April 27, 2007.

The application has been amended as follows:

1. (Currently Amended) An injector system for injection of a fluid medium into a patient within an electromagnetic isolation area, the injector system comprising:
 - (a) a powered injector positioned within the isolation area;
 - (b) a first communication unit integral with the powered injector thereby enabling the first communication unit and the powered injector to be moved as a unit;
 - (c) a system controller positioned outside the isolation area, the system controller comprising an operator interface;
 - (d) a second communication unit integral with the system controller;
and
 - (e) an intermediate communication unit for ensuring communication between the first and the second communication units and therethrough between the powered injector and the system

controller ~~[, the]~~ using an authentication technique therewith, the first, the second and the intermediate communication units being adapted to communicate by transmission of radio frequency (RF) energy through the air, the energy being chosen to not create substantial interference with a magnetic resonance imaging scanner.

2. (Currently Amended) The injector system of Claim 1 wherein the RF energy is electromagnetic energy outside the frequency range of the scanner.
3. (Original) The injector system of Claim 2 wherein the frequency of the RF energy is above approximately 1 Gigahertz.
4. (Canceled)
5. (Canceled)
6. (Previously Presented) The injector system of Claim 1 wherein the intermediate communication unit is positioned within the isolation area.
7. (Previously Presented) The injector system of Claim 1 wherein the injector system has a plurality of the intermediate communication units positioned within

the isolation area for ensuring communication between the first and the second communication units and thus the powered injector and the system controller.

8. (Currently Amended) A system for use with an MRI scanner positioned on a first side of an electromagnetic isolation barrier, the system comprising:

an injector control unit operable to control injection of a fluid medium into a patient, the injector control unit positioned on the first side of the isolation barrier and comprising a first communication unit integral therewith; ~~and~~

a system controller positioned on a second side of the isolation barrier, the system controller comprising a second communication unit integral therewith; and

an intermediate communication unit for ensuring communication between the first and the second communication units and thus the injector control unit and the system controller using an authentication technique therewith, the first communication unit being adapted to communicate with the second communication unit in a bi-directional manner via the intermediate communication unit by transmission of radio frequency (RF) energy through the air, the energy being chosen to not create substantial interference with a magnetic resonance imaging scanner.

9. (Previously Presented) The system of Claim 8 wherein the system has a plurality of the intermediate communication units for ensuring communication between the first and the second communication units and thus the injector control unit and the system controller.

10. (Currently Amended) The system of Claim 8 wherein the RF energy comprises electromagnetic energy outside the frequency range of the scanner.

11. (Previously Presented) The system of Claim 10 wherein the frequency of the RF energy is above approximately 1 Gigahertz.

12. (Currently Amended) A communication system for use with an MRI imaging system, the communication system comprising:

a first communication unit positioned on an interior side of the isolation barrier, the first communication unit comprising a first receiver and a first transmitter; ~~and~~

a second communication unit positioned on an exterior side of the isolation barrier, the second communication unit comprising a second receiver and a second transmitter; and

an intermediate communication unit for relaying communication between the first and the second communication units, the first communication unit being adapted to communicate with the second communication unit in a bidirectional manner via the intermediate communication unit by transmission of radio frequency (RF) energy through the air using an authentication technique therewith, the energy being chosen to not create substantial interference with the MRI imaging system.

13. (Original) The communication system of Claim 12 wherein the first communication unit is positioned within a shielded housing.
14. (Previously Presented) The communication system of Claim 12 wherein the first communication unit is positioned within a shielded housing of an injector control unit of an injector system.
15. (Previously Presented) The communication system of Claim 14 wherein the second communication unit is associated with a system controller of the injector system.
16. (Previously Presented) A method of controlling an injector within an isolation barrier of a magnetic resonance imaging area, the method comprising:

transmitting RF signals outside the frequency range of the magnetic resonance imaging scanner from a system control unit positioned outside the isolation barrier to an injector control unit inside the isolation barrier, the system control unit comprising an operator interface; and

transmitting RF signals outside the frequency range of the magnetic resonance imaging scanner from the injector control unit to the system control unit;

wherein RF signals of at least two different frequencies are transmitted to authenticate data, with each of the RF frequencies being outside the frequency range of the scanner.

17. (Canceled)

18. (Original) The method of Claim 16 wherein a predetermined authentication algorithm is used to authenticate RF signals transmitted between the system control unit and the injector control unit.

19. (Canceled)

The following is an examiner's statement of reasons for allowance:

The current inventive concept of providing an intermediate communication unit to ensure communication between a first and second communication unit, which incorporates radio frequency (RF) authentication through the air is lacking in the prior art. Jones et al. (US Patent No. 5,666,055) teaches IR authentication but fails to provide an intermediate communication unit, as well as fails to discuss authentication of RF energy.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Kish whose telephone number is 571-272-5554. The examiner can normally be reached on 8:30 - 5:00 ~ Mon. - Fri..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571-272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3737

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JMK


ELENI MANTIS MERCADER
SUPERVISORY PATENT EXAMINER